

Examination: BIT - II Semester
Course Title: Data Structures through C - Session: 2011
Course Code: BIT-203

Maximum Marks: 80, Minimum Pass Marks: 32, Time Allowed: 2 ½ Hours

Note: Attempt all questions from Section A and B and only two questions from Section C.

Section A: (Marks: 8X2=16)

1.
 - i) State the difference between static and dynamic data structures.
 - ii) What is a list?
 - iii) State any three applications of Stack in programming.
 - iv) State names of various types of queues?
 - v) State the Syntax of **malloc** and **free** C functions.
 - vi) What is the use of **->** operator?
 - vii) State the definition of a node in singly linked list?
 - viii) State any application of **BST**?

Section B: (Marks: 4X8=32)

2. Write an algorithm to insert an item at any position in an array.
3. Implement a Queue of fixed length strings using an array. Write necessary functions for insertion and removal of items.
4. State the difference between static and dynamic memory allocation techniques. Using a sample program demonstrate the use of dynamic memory allocation technique.
5. What is a Doubly Linked List? State the steps required to insert and remove nodes from a Doubly Linked List.

Section C: (Marks: 2X16=32)

6.
 - i) State and explain algorithm for sorting using Bubble Sort.
 - ii) Write a C function to sort an array using Quick Sort technique.
7. Write a C program using Stack for conversion of operations from infix notation to postfix notation.
8.
 - i) What is a pointer to pointer? Demonstrate the use of pointer to pointer through a sample program.
 - ii) How a pointer to structure can be passed as argument to a function? Demonstrate using a sample program.
9.
 - i) What is a Binary Tree? Write a C functions to traverse a Binary Tree in Pre-order and in-order.
 - ii) The pre order and In Order Traversals of a Binary Tree are given hereunder:
Pre Order: A J D C I E G H F B
In Order: J D A C G E I F B H
Construct the Binary Tree.